Can / Am EMTP News

Voice of the Canadian/American EMTP User Group

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Salford Compiler and DOS Extender

SET CTRLBK=NOTRAP should be in the MS-DOS file AUTOEXEC.BAT if the interactive user wants to interrupt Salford EMTP execution using **Ctrl-Break** prior to the first complete batch execution such as RUN.BAT. This is an extension to the story about **errorlevel** (see column 1 on page 2 of the preceding issue). The need was first announced in E-mail "News:"

of the Fargo list server on June 29th: *"If one uses batch files, the assignment will be made automatically (e.g., see end of   RUN.BAT).   ....   So, the problem is exceptional,   and was not seen for many weeks here in Portland.   The problem will occur immediately after booting a computer --- before the first batch execution ends.   Then, without NOTRAP, Salford EMTP will hang in response to **Ctrl-Break**, it has been found."*

Version 2.71 of Salford DBOS/x86 seems to have solved incompatibility problems of TPPLOT in recent months. The first such report came on May 27th in public E-mail from Ashok Parsotam of Southpower in Christ-church, New Zealand. Mr. Parsotam wrote: *"I tried running ATP6 vintage TPPLOT (the version with which I was experiencing difficulties) with DBOS 2.71. As Dr. Mork suggested, the TPPLOT worked fine."* Your Editor summarized the situation as follows in E-mail "News:" 2 days later: *"This has to be a model termination of a call for help. It is interesting that DC-18 graphics were correct -- which proved the graphics, themselves, were compatible.   Somehow,   TPPLOT   with its windows, mouse, and other extensions, is more demanding.   In retrospect, Prof. Bruce Mork offering the right guess (upgrade DBOS to Ver. 2.71) was not unusual! Previously, we had advised others of the importance for 2.71 for networking (also Prof. Mork's advice). Now we know for some computers it has even more basic advantages (TPPLOT works). Did anyone ever hear how Jeff Selman of Tri-State in Denver fared with his own DBOS update?"*   Mr. Selman was mailed the Version 2.71 disk, and has not been heard from since (usually a sign that the change worked!).   Finally,   static var modeler Gabor Furst outside of Vancouver, British

Columbia, Canada, reported such a cure for his new Toshiba 4700CS in private E-mail dated August 18th. Yet, your Editor continues to compile and link both Salford EMTP and TPPLOT using Version 2.66. Why some computers (particularly portables) have problems, is not known. Fortunately, the cure **is** known!

First Intel Pentium timing of Salford EMTP came from Robert A. Schultz of New York Power Authority (NYPA) in White Plains. This was inserted at the last minute toward the end of the preceding issue. It was an important story that broke at the last minute, so could not easily be given the prominence that it really deserved. Since then, others have tried Pentium for the support of Salford EMTP. Jerry Nordstrom of BPA is one, who acquired for other (non-EMTP) purposes a 60-MHz ALR Evolution V ST. Operation seems to be correct, although simulation is a little slower than reported by Mr. Schultz. Using either MS-DOS SMARTDrive or Salford disk caching (the /DISK_CACHE qualifier), DC-1 remained in the time-step loop for just over 18 seconds. This is still very good, but 3 seconds more than Mr. Schultz had observed. Someone from Siemens near Atlanta, Georgia, USA, earlier had reported similar (18-second) speed by telephone. Readers are reminded that all Pentiums are not created equal. As for some of the faster ones, Mark Hinrichs of Los Alamos National Laboratory (LANL) already has a 90-MHz model from Gateway, according to E-mail dated July 26th. In his reply the following day, your Editor asked Mr. Hinrichs to *"let us know if you do significantly better"* (than the 15.2 seconds of Robert Schultz).

Novell DOS 7 is the latest operating system to be approved for Salford EMTP use by Harald Wehrend of the University of Hannover in Germany. In public E-mail of the Fargo list server, Mr. Wehrend wrote the following on May 30th: *"Novell DOS, version 7, is the continuation of DR DOS 6.0 with some very interesting additional features. ... Here in Germany one can find prices of about 70.00 DM for Novell DOS .... As I understand the technique of Novell DOS 7, the main advantage is the DOS Protected Mode Service (DPMS) that makes it possible to highload programs like DISKCACHING, UNDELETE, DISKMAP, and STACKER above 1 MB. Within my usage for about 3 months now, I have found it to compatible with ATP, DESQview/X, and MS Windows as I use those programs."* For the effect of Novell DOS's dynamic disk compression on bitmapped PostScript, see the separate story about ATPDRAW by Hoidalen. With the disks of both ATP development computers at BPA now full, the space-saving aspect of DOS 7 is a dominant advantage.

"Novell DOS 7.0 : the latest and greatest?" is the section heading that begins page 591 of the July issue of *Computer Shopper* magazine. The 2-page story by Barry Brenesal begins on page 590, and is entitled *"Dueling DOSs."* The story about Novell begins: *"There's been no significant improvement in operating systems to match Novell DOS 7.0 since MS-DOS 5, and before it, since MS-DOS 3. Instead of building on current MS-DOS code as IBM has, Novell bought and substantially enhanced DRI's DR DOS 6. The results differ substantially from IBM and Microsoft --- usually in Novell's favor. Many standard DOS commands, for instance, are dramatically enhanced in Novell DOS 7.0. Its DISKCOPY can retain an image of your current floppy disk as a file for later transfer to another disk. HISTORY, the command-line editor, maintains a list of commands entered inside applications, unlike DOSKEY in MS-DOS 6 and PC-DOS 6. .... Two copies of the operating system installed on separate computers are able to share everything --- files, printers, and CD-ROM drives --- without additional software .... Though networking is the most visible difference between Novell DOS 7.0 and the competition, it's of little practical advantage if you don't network. On the other hand, Novell DOS 7.0's DOS Protected Mode Services (DPMS) API benefits everybody."*

Needing dynamic disk compression (e.g., STACKER) to free disk space on both BPA computers, Dr. Tsu-huei Liu and your Editor asked Laura Young, BPA's local computer representative, for Novell DOS 7. On July 8th, Ms. Young was provided with the July issue of *Computer Shopper*, which contains advertising by ComputAbility Consumer Electronics on pages 514 and 515. One of the 9 colored, feature boxes is for Novell DOS 7. The description is followed by "PC $45.95." Interested readers are advised of the toll-free telephone number: (800) 554-9903. This street price is much better than the information at the end of the *"Dueling DOSs"* story of the preceding paragraph. That story concluded with a "Product Listing" box that included the following price: "Sugg. List Price: $69.95 (upgrade)." As known for a long time, list prices often mean little. So what happened at BPA? Around the beginning of August, Ms. Young explained that DOS 7 could not be ordered now because no more money remained in her budget. This is yet another indication that those salmon are too expensive!

Cycloid Systems, Inc. of Flin Flon, Manitoba, Canada, supplied BPA contractor Laurent Dubé with the Salford C compiler. This was preparation for work with compiled MODELS (more about this next time). The manual was brought to BPA June 28th, at which time your Editor quickly noted that all FORTRAN library functions seem to be available (impressive). Of course, DBOS/x86 is used. In the preceding issue, telephone numbers were missing: Graham Wood; Cycloid Systems; work: (204) 687-2038 home: 687-3544 fax: 687-3663

The "ERROR illegal application XX" warning message of DBOS (see the January, 1993, issue) has been solved by Prof. Laszlo Prikler of the university in Budapest, Hungary. In public E-mail of the Fargo list

server dated April 28th, he wrote: *"The medicine comes: Remove (DELETE or RENAME) the DBOS.INF file from your DBOS directory and the message disappears. I do not know what should really be in that file, but nonexistence of the DBOS.INF file pains neither DBOS nor me."* This seems to be good advice for persons such as Prof. Prikler who do not use the Salford compiler. But at BPA, the .INF file must be retained. In E-mail "News:" dated May 29th, your Editor reported the following: *"Prof. Laszlo Prikler's now-famous medicine (removal of DBOS.INF) is not recommended for those who have the Salford FORTRAN compiler, too. Using Dr. Tsu-huei Liu's computer here at BPA, this writer was shocked to learn that renaming DBOS.INF seemed to convert a regular version of the compiler into some demonstration or student version! That is, there was immediate trouble compiling almost any EMTP subroutine because of some overflow (the error message begins 'Demonstration limit exceeded')! So, the .INF file does have meaning, and this seems to be associated somehow with use of the compiler."*

If NOPOST of STARTUP is zero rather than unity, batch-mode vector graphics (CALCOMP PLOT use) of ATP will result in PostScript output ATPPOST.001, etc. As explained in public E-mail of the Fargo list server dated July 17th, value unity (to suppress the PostScript output) did not work prior to correction on July 14th. Users of older versions are advised to avoid the change.

Improvements to Salford TPPLOT

Power and energy signals of the output vector now are identified in .PL4 files. This followed a request from BPA's Randy Suhrbier as explained in more detail in the final story of this issue. To see how Salford TPPLOT uses the information, consider the following illustration from the first subcase of DC-4. There is a single power at the end of branch voltages, and the corresponding energy at the start of branch currents:

```
Type-4 entries (node voltages) :
   5 ASW10     6 BSW10     7 CSW10
Type-8 entries (branch voltages).   ...   ######
   ....      3 ENDA   A10      *4 B1     BSW1
Type-9 entries (branch currents).
   *8 B1     BSW1      9 GENB   B1      10 E ...
```

An asterisk (star "*") immediately before a variable number indicates power or energy. This will always be seen for C-like files (the preferred alternative). For the FORMATTED or UNFORMATTED alternatives, such marking will be seen if and only if TIMESPAN precedes the CHOICE command (of which output has just been illustrated). In plotting both power and energy on the same graph, users are reminded of the need for scaling (e.g., the AUTO button within the CURVE window).

X-Y PLOT was improved on August 12th when the need to respecify variables was removed. Previously, the following warning message was seen upon the return to text mode following an X-Y plot: *"=== Warning. Re-specify plot variables now (using # or NAME) whether or not X-Y PLOT is sent to end X-Y. This could have been avoided by the use of # rather than NAME."* This continues to be seen if the user has selected his variables using NAME. But there will be no such message if # is used instead --- either through the keyboard or the mouse (clicking on the entries of the CHOICE output). The program saves the old # command line (if any), and will re-execute it automatically upon the return to text mode. The user will not see the command itself, but he will see its effect: the table that documents which variables were selected. X-Y PLOT usage is illustrated by a new disk file XYPLOT (execute by @XYPLOT). For this example, the new variable table appears as follows:

Request	Type	Curve	Name-1	Name-2
1	4	1	NODE2	
2	4	2	NODE1	

Japanese laser printers sold within Japan generally seem to be incompatible with full-resolution alternatives of Salford TPPLOT. The problem first was explained to others in "News:" of the Fargo list server dated July 7th. Quoting from "News:" dated July 17th: *Prof. Yoshihiro Murai of Gifu University in Japan has trouble producing laser-quality plots on his Epson LP-1500 laser printer .... Well, the lack of H-P Laserjet Series II compatibility has been confirmed by another Japanese user of the LP-1500, Taku Noda, who presently is studying with Laurent Dubé on the Oregon coast. It was during a visit to BPA by the two of them on July 14 that Mr. Noda proposed a solution for Prof. Murai and others. Prof. Murai also responded with his own idea."* Both experts agree that the problem can be solved. Look for details in the next issue.

News from Outside USA and Canada

The dominant EMTP news from overseas has to be reorganization of the European EMTP user group (see later, separate story) to replace the former LEC (Leuven EMTP Center) in Belgium. World-wide distribution of ATP materials already is a reality, and the first user group meeting now is scheduled for Hannover, Germany, November 7th and 8th.

The United Kingdom (U.K.) now has another source for the more common ATP supplies: Gayle Collins at the University of York in England. This all began on May 11th when Ms. Collins sent private E-mail to your Editor from **<gfc@ohm.york.ac.uk>** She wrote: *"I have recently set up an account here at the university for the purpose of distribution of atp materials. ... This account is solely to recoup the cost of materials and postage. I have found that in this country a lot of the companies are not on internet and want both the old rulebook and what has been translated of the new plus the atp disks."* In public E-mail the following day, your Editor endorsed the

idea as follows: *"This is old business, dating to times long before Copenhagen, and probably before the end of LEC. ... There is no reason Dr. Kizilcay's project should interrupt plans for proposed distribution of ATP and its Rule Book within England. Great Britain is big enough, and has enough ATP-interested persons, to make local distribution worthwhile in spite of availability from a larger, better-stocked (more ATP products) center in Germany. Remember, no ATP monopolies are being granted, and any two ATP-licensed users are encouraged to share materials. Certainly cost-related distribution as proposed qualifies. Yes, Ms. Collins mentions only materials and postage, but she is advised to add a minimum of 10 or 20% to cover possible losses, and partially compensate for the pain. It is hard to believe anyone would complain; and if they do, let them submit their own proposal with significantly lower prices!"* For licensing, Ms. Collins now uses her own separate BRITFORM, which is a modification of EUROFORM (used by Dr. Kizilcay). Like Dr. Kizilcay, Ms. Collins has been authorized to validate the licenses on behalf of the Can/Am user group. Original copies of the licenses then are mailed back to Portland periodically, and names and addresses are shared with Dr. Kizilcay. To conclude, ATP-interested parties within the U.K. are fortunate to have this second alternative.

A printed copy of the April newsletter was mailed by BPA to each of its primary EMTP contacts (9 including Dr. Kizilcay's distribution center in Germany) on May 18th --- the same day APR94.ZIP was sent by FTP to Prof. Bruce Mork for placement on the plains server **plains.nodak.edu**

The 52-page MODELS chapter of the Rule Book was mailed by BPA to the same 9 contacts on August 5th.

More about Electronic Mail (E-mail)

JAN89.ZIP is the compressed disk file for a WordPerfect approximation to the actual January, 1989, issue of the newsletter. About its creation, see the separate story about optical scanners. Availability of JAN89 from the plains server was announced by Prof. Bruce Mork in list server mail dated July 14th. Since then, all other issues have been converted and made available. These begin with SEP88 (note the unusual first month), and cover every quarter since then.

Both subscription to, and desubscription from, the Fargo list server has posed a challenge for some in recent months, so readers will be reminded once again. File EMAIL.ZIP on the GIVE2 disk of Salford EMTP distribution provides the answers (see Prof. Bruce Mork's pioneering article in OCT91.DOC).

"Microsoft Mail Server Debuts; Product will address

new uses of E-mail" is the headline of a story that covers most of page 15 of the July 4th issue of INFORMATION-WEEK magazine. Is this more FUDding? According to the story, *"on June 21 Microsoft introduced its next-generation messaging product, the Microsoft Exchange Server. The Windows NT - based messaging server surpasses the features and functionality of the current Microsoft Mail system ... More than 60 independent software vendors have announced plans to build products for Exchange."* Plans of competitors Lotus, IBM, H-P, and WordPerfect (Novell) also are mentioned. How big is the E-mail market? *"There are 40 million electronic-mail boxes, according to International Data Corp., ... And that's expected to double over the next three to four years."*

Northern States Power (NSP) in Minneapolis, Minnesota, USA, has E-mail for messages if not for FTP file transfer. The first such communication was received in Portland from address **usnspqzp@ibmmail.com** on July 22nd. This was sent by Glenn Wrate, a graduate student of Prof. Bruce Mork at Michigan Tech in Houghton, Michigan, who has been working at NSP this summer. Asked for a summary of the system, Mr. Wrate submitted the following in a second message later the same day: *"Internet mail is accessible to IBM Mainframe users via IBMMAIL. Individuals that use PROFS, ELF, IE, Office Vision, etc. for internal IBM mainframe mail can send and receive mail over the Internet -- if their organization allows it! All they need do is send a note to IBMMAIL(REGISTER). In a few minutes an automated response with an IBMMAIL account name will be received. This account name (for example, mine is USNSPQZP) and @ibmmail.com combine to form your Internet address. Any Internet user can now send you mail. I believe it costs your organization 50 cents for each piece of mail received. [P] Sending mail to someone on Internet is more complicated. There are two possibilities: set up a permanent account or address the message on the fly. To set up a permanent account send the following lines to IBMMAIL(INTERNET):*
            /internet
            /register atp-emtp@vm1.nodak.edu
            /end
I used this method to setup account I1117505 for the ATP list server, atp-emtp@vm1.nodak.edu. To use the on the fly method the following lines are used to begin the message; again sent to IBMMAIL(INTERNET) :
            /internet
            /to atp@AGORA.RDROP.COM
            /report
            /end
The /report line is not necessary, but it gives you a report that tells if IBMMAIL received the information correctly. I have not seen anything official on this, so I do not know if this second method will set up a permanent account. This first method definitely does. Also, FTP is not available."

"Internet brings corporate data to new audience" is the headline of an Associated Press story by Rob Wells on page F1 of the July 3rd issue of The Oregonian. The information in question is what, by law, American companies must report to government regulators. *"Wall Street firms, corporate lawyers and others pay an estimated $250 million a year to be wired into this information gathered by the Securities and Exchange Commission. .... Earlier this year, a wider public got its first chance for an easier look at a main source of this data --- the commission's 'Edgar' system. An experimental link was made between Edgar and the Internet .... Malamud, who runs the computer system that handles the Internet link to the SEC data, said between 3,500 and 4,000 corporate documents are now snatched off the Internet daily. .... The Internet link was a coup: Cheap public access for investors, job hunters, researchers, and political activists. .... Some believe the link sets an important precedent for how government information is priced and sold to the public in the digital age."* For this as for so many other things these days, being computer-literate is the key, of course. Needless to say, those who shun computers are not impressed: *"But detractors say the Internet isn't easy to use at first and doesn't always locate documents. .... it still costs money and requires a basic investment into computer equipment that many Americans can't afford."*

BENCHINF.ZIP in plains ftp directory atp/bnchmark was announced by Prof. Bruce Mork of Michigan Tech in list server mail dated May 19th. This is a contribution from Prof. Corwin Alexander of Oregon State University in Corvallis. It is said to be *"an indexed listing of the benchmark files."* The only problem would seem to be age: developers in Portland keep changing details.

CompuServe was dropped by Gabor Furst before he could report on its FTP service (see story in the middle of column 2 on page 6 of the preceding issue). This is the good news as reported from the Fargo list server on May 17th. That Mindlink address to which Mr. Furst has switched is **gfurst@mindlink.bc.ca** His reasons were clear enough: *"Mindlink seems to be working fine. .... I have even managed to do some FTP's. So, I am quite satisfied. The Mindlink charges are between $130 and $200 Canadian, depending on the option you choose. Even ignoring FTP, I will be saving about $C200 a year. Not bad."* By Agora standards (US$60/year, which would be about C$85), Mindlink looks expensive. But by CompuServe standards, it probably **is** cheap!

America On Line (AOL) is a major competitor of CompuServe in the USA. As explained in public E-mail of the Fargo list server dated June 5th, mail from this service originated with Thomas E. Field of Nashville Electric Service in Tennessee (USA), who then was using address <**Genesing@aol.com**>. In E-mail dated June 2nd, Mr. Field confirmed that AOL, like CompuServe, does not offer FTP. But he was thinking of ways to circumvent the limitation (as with BITFTP). He wrote: *"Although there is no FTP, there may be a way around it as your Jan. 94 newsletter stated. I have to find another node that has FTP which can use the attach option from an EMAIL message. The IEEE may have such an option at ftp.ieee.org. The person to contact is with the U. of Minn. at gopher@boombox.micro.umn.edu"* Does any reader know anything about these latter two addresses? Yes, that **.umn.edu** is shared by Prof Ned Mohan in Minneapolis (this is the same place). About AOL, the joke among Internet users is that the "O" stands for "off" rather than "on" because lack of FTP means that AOL users are off-line with the rest of the world!

"Internet e-mail sells boxer shorts" is the title of a story on page d13 of the May 8th issue of *The Oregonian.* The subtitle reads: *"San Francisco's Joe Boxer Inc., a maker of underwear, figures out a new way of reaching the twentysomethings."* Included is a picture with the caption: *"This new Joe Boxer billboard ad in downtown San Francisco offers an e-mail address instead of a phone number."* So, why E-mail address **joeboxer@jboxer.com** rather than the usual telephone number? Supposedly E-mail *"opens up one-on-one communication. Rather than calling an 800 number and getting an operator who just has some information, they get the Joe Boxer culture -- really wacky and really real,"* according to a Joe Boxer spokesman. *"There are 20 million people on the Internet. We'll definitely be seeing more of this,"* according to one Internet provider. In Joe Boxer's case, it seems that *"15 to 20 messages arrive a day and each gets an individual response."* About underwear?! This **is** revolutionary!

Saudi Arabia first was heard from by E-mail on July 12th when Ismail Hamza of EWR in Makkah sent a message from Compuserve address 71232,2731. Mr. Hamza was interested in various disk files. In his response, your Editor advised: *"did you have no other choice than CompuServe? .... Universities generally have real Internet, and hence FTP. This probably would be the easiest way for you to gain access to ATPDRAW and many other files of the plains server: seek the cooperation of a university."*

FAX might better compete with E-mail using BFT, which stands for Binary File Transfer. This idea can be found in Richard Dalton's Managing Technology column in the June 27th issue of *Information Week* magazine. BFT *"allows fax machines to send and receive binary-encoded files. Your machine, however, will have to be retrofitted to handle BFT and, as you might guess, there are two competing standards: Microsoft's and everyone else's."* Why not abandon FAX? Resolution is said to be surprisingly low: *"a fax is essentially a transmitted bit-mapped image -- typically 203 by 98 pixels, which can be improved to 203 by 196 if you're willing to increase transmission time and cost."* Who is winning? *"About 25*

million machines are now in use .... There are five to six times as many personal computers as fax machines ... Yet only about 15 million PC users have ... electronic mail."

Short courses on Internet are being sold to the business community via newspapers. Page B4 of the July 7th issue of The Oregonian is otherwise covered with closing stock prices on the NYSE and NASDAQ stock exchanges. But 1/3 of the page has been sold to The Delta Group, Inc., which advertises *"INTERNET: the business information superhighway."* Included is a picture of *"guest speaker Mark Gibbs, author of Navigating the Internet"* (a book said to be worth $29.95). For $369, the one-day (August 16th) offering at some hotel promises to *"detail : * What services exist; * What business benefits are offered; .... * The most promising business opportunities."* In addition to the book, one receives *"free access software."* What a deal (maybe free coffee and donuts, too?)!

Southern California Edison Company (SCE) in Rosemead first sent E-mail to your Editor on May 19th, when a note from Jim McCabe arrived. Unlike mention in the October, 1993, issue, this May message did not come from CompuServe. Instead, it came directly from the company, which now has FTP capability. Address **mccabejc@sce.com** is being used by Mr. McCabe.

Power Technologies, Inc. (PTI) of Schenectady, New York, first sent E-mail to Agora on May 17th. Pasting to avoid error, this came from **ta.short@pti-us.com** which is the address used by Tom Short. Regular naming has the family name and a period preceded by the first two initials. So, Mr. Short indicates, Dr. Gary C. Thomann's address should be **gc.thomann@...** Good deal, another important E-mail gap has been filled. Can neighboring General Electric be far behind? EMTP-involved contacts there continue to struggle to gain E-mail access to the outside world. In recent months, your Editor has talked to both Anne Bozarth and Dr. Daniel Baker about the problem. Others in the complex certainly do have and use Internet addresses. In fact, your Editor sent a file to one of them on June 23rd! This was for BPA's Gerald Lee, who was involved with the procurement of some capacitor bank. His information was in the form of an MS Word for Windows document. After first PKZIPping, and then UUENCODEing, the file was sent to G.E. address **dmichelluc@fe1.sch.ge.com** without difficulty.

Robert Meredith of New York Power Authority in White Plains, USA, has been experimenting with E-mail of his own --- separate from that of colleague Robert Schultz. The first message was received by Agora on July 11th from address **<meredir@mary.iia.org>** Mr. Schultz wrote: *"I am composing this under pine on my new (first) Internet access from home. The cost is just right - free. An outfit in Washington, DC, or Hackensack, New Jersey, depending on whom you believe, is offering free internet service. They call themselves the International Internet Association and their connection point is in Hackensack, which is a local call for me. They also offer free internet access to anyone via an 800 number which is charged at rate of 14-15 cents a minute for the long distance service. Whether or not it will remain free remains to be seen. Apparently the 800 number charge includes a 3 cents / minute subsidy to pay for the Internet. Those of us with local call access seem to get a free ride, just for the privilege of exposing us to the new option of long distance service in their menuing system. I'm just getting my fingers wet -- not my feet yet. I seem to have FTP, Kermit and other resources at my disposal .... Pine seems to offer the possibility of sending and receiving attachments of all kinds, so there may be some useful capability there which Schultz does not yet have on his BBS. .... The node I am connected to, **mary**, seems to have ten thousand user ids in the same parent directory I am in. So, this is a big operation. Our local paper said something about them having a 50 thousand applications backlog, being handled at 1500 per month by a staff of one. I hope the lines do not get so congested that I can not get through. So far so good. I had to wait only 5 minutes to get on this time."* Only in New York; only in New York!

In Taiwan, Salford EMTP became available by FTP transfers of Internet. Using public E-mail of the Fargo list server, Prof. Nanming Chen of National Taiwan Institute of Technology announced this service on May 2nd. First we had Martin Jones in Nottingham, who offered such service within the United Kingdom. Next came Laszlo Prikler in Budapest, Hungary -- offering service on the continent. Now, Prof. Chen in Taipei. The revolution is ongoing, and obviously it has ramifications for printed paper as well as computer programs. Question: how much longer should newsletters such as the present one continue to be printed in quantity on paper, and mailed using stamps and envelopes? Do not bet on free paper forever.

Korea first contacted your Editor by E-mail on May 9th when an inquiry concerning TACS in DCG / EPRI EMTP was received from Prof. Chul-Hwan Kim of Sung Kyun Kwan University in Suwon. The address is **chkim@yurim.skku.ac.kr** Of course, your Editor pointed out to Prof. Kim that deficiencies of the EMTP version licensed by EPRI were not shared by ATP. For example, perhaps DCG / EPRI EMTP did not allow GO TO and DO statements at the end of the past decade (Prof. Kim cited such *"new capability in ... Version 3.0"*). But ATP certainly did using Laurent Dubé's MODELS . So, ATP needs no such minor enhancements to TACS, it was explained.

KEPCO (the Korean Electric Power Company) heads the Korean ATP user group, so this should be the most important site for E-mail access on the peninsula. Well, on June 19th, chulhyu lee sent a message to your Editor

from address **<lch@hanbit.kepcorc.re.kr>** It read: *"This is just to test my e-mail function first. I'll be able to communicate with you by e-mail if possible. Please let me know that you received this message."* Of course, your Editor responded immediately, but has received nothing more from **kepcorc.re.kr**

pub/bamork/incoming is a new subdirectory in Houghton for files that are to be sent by FTP to Prof. Bruce Mork of Michigan Tech. In E-mail dated April 5th, he wrote: *"Files or information that is to end up on the plains ftp site can be sent to me by anonymous ftp at ftp.ee.mtu.edu .... Please **do not** contribute files without first getting approval. After you receive approval, the file may be transferred at your convenience. Typically, I will then unarchive the file, scan it for possible viruses, rezip it, and then transfer it to the plains site."* Your Editor used this new facility for the first time on May 18th to send the April newsletter to Prof. Mork. Following a successful **open ftp.ee.mtu.edu** command, *anonymous* must be sent as the user name, it was found.

Jakarta, Indonesia, has CompuServe as demonstrated by Dr. Mustafa Kizilcay of Lahmeyer International in Frankfurt, Germany. This was explained in public E-mail of the Fargo list server on June 1st. The story is interesting. Received by Agora, E-mail dated May 17 had subject *"Greetings from Brunei via Jakarta."* Dr. Kizilcay wrote: *"I have succeeded to establish a CompuServe link to Jakarta, Indonesia, through my cheap modem (made in Taiwan!). I left the expensive Lahmeyer modem at home ... (since it is) very sensitive to telephone exchange apparatus."* Of course, this writer answered immediately to 100117.2536 within CompuServe, and Dr. Kizilcay later reported that the message was received there immediately. Like FTP or Telnet, CompuServe's mail delivery would seem to be a real-time operation. Compu-Serve has no way of knowing where in the world Dr. Kizilcay next will be picking up his mail (think about it)! About modems, Dr. Kizilcay had been disappointed in Copenhagen (see preceding issue): he was unable to dial out to CompuServe from his hotel room. So, for this later trip, he used a different modem. More expensive and sophisticated is not necessarily better when it comes to traveling with modems, it would seem. Again, KISS.

Movie stars of Hollywood would seem to be the latest group to have caught the E-mail fever. The following was noticed in the front-page news summary of the June 3-5, 1994, edition of *USA Today* newspaper : *"STAR CONNECTION : Communicating with celebrities by computer e-mail is catching on. Actress Rosie O'Donnell, left (picture), gets 20 to 30 messages a week. There's even a new book, 'E-mail Addresses of the Rich & Famous.' But how do you know there's really a star on the line? 4D."* That's the right question, all right (remember those famous *Christmas greetings* from LEC around the end of 1992)! In any case, how big are these group discussions? Page B6 of The Oregonian dated June 16th carries an Associated Press story by Evan Ramstad entitled *"Cyberspace draws celebrity crowds, adoring fans."* It is said that *"record labels, movie studios, book publishers, political parties and public relations firms have discovered they can reach a large audience quickly and directly through the on-line systems. The five largest --- Prodigy, CompuServe, America Online, Genie and Delphi --- have about 3 million paying customers and are used by 2 million more, analysts estimate. Compu-Serve and America Online hold live 'chat' sessions, in which up to 500 participants see the discourse scroll by and can jump in with questions. The others put out a notice seeking questions for a particular celebrity. The responses follow generally a few days later. Prodigy, though, will soon change to live celebrity chats, with room for up to 3,000 people at once."* Right, as long as customers are willing to pay, Prodigy will continue connecting the lines! But who would want to be in a discussion involving 3000 persons? Even a group of half a dozen sometimes is difficult to control!

"News:" reports of the Fargo list server were discontinued following Roger Argenal's final diatribe dated July 19th. Your Editor tired of the arguing, and decided it distracted too much from the real goal (ATP development). Prof. Bruce Mork obviously was bothered by the exchange (e.g., his articulate private E-mail dated July 7th), but seemed to do nothing publicly. No other subscriber responded. At any typical public meeting, the person in control (e.g., a meeting chairman) would simply prohibit such emotional exchanges, and could eject anyone who persisted. A list server without such controls seems to be of limited usefulness. Anyway, this was the conclusion of your Editor, who never enjoyed very much the burden of writing news twice a week, anyway. So, this load has now been left for others to carry. Your Editor has decided not to waste more of his own time by further sharing any forum with the Roger Argenals of the world. Your Editor decided at the last minute not to mail his response to Mr. Argenal's final, vitriolic outburst. Your Editor decided simply to count his blessings: he is grateful to have lost forever all personal contact with Mr. Argenal of Calgary, Alberta, Canada.

Altered Can/Am Distribution Policy

LICENSE.ZIP contains in WordPerfect format the 6-page form letter that is used as a combined licensing and order form by the Can/Am user group. Fundamental changes are about to be made as this issue goes to press.

Dr. Kai-hwa Ger, who is Dr. Tsu-huei Liu's husband, has taken over the job of distributing the most commonly-requested ATP materials (printed ATP Rule Book, Salford EMTP and TPPLOT, etc.). He also should be handling ATP licensing. After nearly 7 years, your Editor long

ago has tired of this work, and has been actively seeking a replacement for the past year or so. He is grateful to Dr. Ger for the offer of relief, which is happily accepted.

$50 is the new price for each copy (order as many as you want!) of the printed Rule Book, and $10 is the price for each standard, 3-disk Salford EMTP and TPPLOT update --- including 2 ATPDRAW disks at no extra cost! ATPDRAW by itself will be $5. For years, distribution has been handled as a money-losing hobby by your Editor. Finally (it is long overdue), prices are being raised to cover all material costs. Labor still is not being compensated as any normal business would, so the change is viewed as an interim, temporary solution only.

The best address to be used for all correspondence associated with the new distribution service is:

3179 Oak Tree Court
West Linn, Oregon 97068

There is no change in the bank account (checks still should be made payable to Tsu-huei Liu). More later.

Optical Scanners Read Printed Text

An optical scanner is a device that allows computers to convert printed text into a corresponding, computer-stored text file. At least this is the theory, or the hope, when used in character (as opposed to bit-mapped) mode. Initially, any printing is converted to a bit map. Then a computer program tries to convert the raw pixels to characters. To this second phase, the acronym OCR (optical character recognition) is frequently applied. After an unfavorable initial consideration early in 1992 (next paragraph), scanning and OCR finally has been used successfully to recover some old EMTP-related text for which disk files had been lost. This is important progress.

For years, an H-P ScanJet Plus had been connected to a 20-MHz, 386-based computer that was located about 50 feet from your Editor's office at BPA. After hearing favorable reports of use by others, your Editor finally decided to ask Walter Powell to demonstrate operation. This was on January 24th, 1992. For years, developers at BPA had interest in a disk file of the EMTP Theory Book. So, a typical page (which one has long since been forgotten) that included a figure, a significant equation, Greek letters, and sub- or super-scripts, was selected as a test. Not surprisingly, ordinary English-language text was recognized perfectly. But the rest might as well be garbage. Who knows of special logic for engineering or mathematics? At BPA, H-P software (Gallery Plus 5.0) that came with the hardware was used, and this clearly is not suitable for the Theory Book. It is obvious that something has to be changed. As the process is made more accurate, it should be made faster, too (the one Theory Book page required some 10 minutes, which is impractically long).

How about character recognition of FAX? During a telephone conversation April 1, 1992, MODELS author Laurent Dubé informed your Editor that he had software for which such claims are made. The following night, your Editor printed a page of text using the default font on our LaserJet series II printer. He then sent this to Mr. Dubé's computer via BPA's separate FAX machine. Two tries were required, since the first transmission failed to terminate properly (the alarm light turned on) for some unknown reason. The second copy was received normally according to Mr. Dubé, but it required some 15 minutes to process, and the recognition was very low (maybe 5%). But since then, Mr. Dubé has reported that other FAX are much more recognizable, requiring only minor clean up (hand editing). To conclude, the success of OCR with FAX seems variable and unpredictable.

During June of 1994, BPA's Dr. Tsu-huei Liu and your Editor reconsidered the same old H-P scanner. Using newsletter text, the process is much faster (less than a minute per page), and also is reasonably accurate (maybe 98% correct, on average). Most trouble was repetitive, with double l's ("ll") often being wrongly read. This would seem to be a problem with proportionally-spaced fonts: they are more difficult for OCR to handle. For example, the first occurrence of **Gainesville** in the January, 1989, issue was reported as **Gaines?v?i?l?le?** An early occurrence of **will** was reported as **?w?i?u** . Etc. Even though underlining was not used, the scanner sometimes seemed to think it was. So, a lot of hand editing was required.

JAN89.ZIP is the compressed disk file for a WordPerfect approximation to the actual January, 1989, issue of the newsletter. The original was produced, printed, and mailed by Thomas Grebe, then with Virginia Power in Richmond (USA). Until JAN89.WP5 was finished during the weekend of July 9th and 10th, no computer-stored copy had been available to known ATP contacts. So, your Editor went to work on scanner output, and some 8 to 10 hours of work later, he had a final approximation that in format resembles Portland-published issues (1990 through the present). Editor Grebe's *clip art* was omitted, and the original 3 columns were converted to the newer standard of 2. The Word-Perfect approximation does not use newspaper-style continuations (on later pages), either.

Free Ghostscript Shows PostScript

Ghostscript by Aladdin Enterprises is shareware that allows PostScript to be displayed on computer screens. It does for PostScript what PRINTGL by Ravitz Software did for HP-GL (see story on page 18 of the April, 1993, issue). Ghostscript is better than PRINTGL in that it is royalty-free, and can be given to anyone. The copy in use in Portland came from Robert A. Schultz of New

York Power Authority (NYPA) in White Plains early this year. The 1.29-Mbyte archive GS26.ZIP is dated 16 November 1993, and the README.DOC indicates one distributor to be : Free Software Foundation, Inc.; 675 Mass Ave; Cambridge, Massachusetts 02139; USA

If NOPOST of STARTUP is zero rather than unity, batch-mode vector graphics (CALCOMP PLOT) of ATP will result in PostScript output ATPPOST.001, etc. As explained in public E-mail of the Fargo list server dated June 8th, Ghostscript is generally compatible: *"This writer took ATPPOST.001 that was produced by simulation using the data of DC-53. Ghostscript does output a message about a missing font ('Can't find [or can't open] font file phvr.gsf for font Helvetic, substituting Ugly'), but this is just a warning. The plot looks perfect except for an unwanted 90-degree rotation counter-clockwise (i.e., the time axis points upward). The NYPA Post-Script assumed landscape orientation whereas Ghostscript seems to assume portrait. Searching the file for '90', this writer found the following line :*
/relrotatedeg 90 def % relative rotation of ....
So next he searched for "relrotatedeg" and found it only in: relmovex relmovey translate relrotatedeg rotate % 501. Removing this line by adding '%' in column 1 restored the correct orientation. If Ghostscript is going to be used to examine ATP plots, should the GRAPHICS file carry a new parameter to control such addition or omission? No, it probably would be better if Ghostscript could do the rotation (can it? If so, how?)."

Apple Macintosh, too, has Ghostscript ! Because graphics of Macintosh ATP are otherwise undeveloped, this takes on added ATP importance. The interested Mac user is referred to page 616 of the July issue of *Computer Shopper* magazine. The following has been taken from a short story entitled *"Mac Ghostscript"* by Jeffrey Sullivan. This is one of two offerings under the title "Freebies of the Month." Mr. Sullivan writes: *"Today, Mac users no longer have to choose between second-cousin QuickDraw printers or expensive PostScript support. The Free Software Foundation has released a freeware PostScript interpreter. Although Adobe may gnash its corporate teeth, the prospect of a freely available PostScript rasterizer has many entry-level folks grinning. .... What MacGS does is provide a stand-alone PostScript interpreter that reads PostScript or Encapsulated Postscript (EPS) files and renders the image they represent. MacGS lets you either save the image (or a section of it) as a PICT file, GIF, PBM (portable bitmap), or PPM (portable pixmap), or print it to a non-PostScript printer."* Yes, this sounds like exactly what ATP users will be needing.

Robert Meredith of New York Power Authority (NYPA) in White Plains provided the latest information about Ghostscript in E-mail dated August 4th. He wrote (remainder of this paragraph): *"I just FTPd the latest*

*version of Ghostscript for DOS and Windows, as well as Ghostview for Windows, from **ftp.cs.wisc.edu**. It took probably close to 2 hours to get all the files downloaded. They all seem to work, though. This is version 3.0 of the Ghostscript and version 1.1 of Ghostview. The files available and their sizes are:*
Fonts for all versions: gs300fn1.zip - 1360K
gs300fn2.zip - 740K
DOS version gs300dos.zip - 823K
Windows version gs300win.zip - 382K
gs300ini.zip - 406K
gsview11.zip - 496K
That kept my modem busy! As usual the DOS version is fast, but does not have the flexibility offered by Ghostview, i.e. changing screen orientation. Ghostview does a very nice job of displaying our ATP postscript plots. At 1280 x 1024, even at four plots per page all are readable. These versions are hot off the press with dates of August 1 to 3, 1994."

Replacement European User Group

This is a continuation of the story that covers most of page 10 of the preceding issue. It documents the slow replacement of the former LEC (the Leuven EMTP Center on the campus of K. U. Leuven in Belgium).

The first general announcement of services of the new ATP distribution center in Frankfurt, Germany, was made by Dr. Mustafa Kizilcay in public E-mail of the Fargo list server dated June 13th. This historic communication began with the following outline: *"Topics:*
∗ ATP-EMTP Order Form
∗ Currency for payments
∗ Licensing agreement EUROFORM.ZIP
∗ ATP-EMTP Fall Meeting"
The order form and licensing agreement are available as WordPerfect files in directory **/pub/atp/license** of the plains FTP server as announced by Prof. Bruce Mork in list server mail dated June 17th. Also in that new directory is an updated copy of Can/Am licensing, which is disk file LICENSE.ZIP.

About currency, it should surprise no one that German marks (i.e., deutschmarks, abbreviated DM) are required. Dollars were mentioned 3 months ago for ease of comprehension by American readers and others in the world who were unfamiliar with German currency. Credit cards might later provide a more convenient means of payment, however, as was discussed in public E-mail of the Fargo list server dated June 19th. Your Editor wrote the following (remainder of this paragraph: the matter is complicated, and is still under study. .... It was learned that, in Frankfurt, each credit card is handled by a different bank! Dr. Kizilcay's hope was to allow 4 cards: VISA, Mastercard, American Express, and Eurocard. .... Consider one enormous advantage of plastic

(credit cards) rather than paper (checks): the conversion from foreign currencies to German marks (DM) would be done automatically! This seems far more attractive than using some neutral currency such as the ECU. The ECU is to money as Esperanto is to language: it is foreign to everybody at the street level. Plastic would seem to avoid all problems associated with foreign checks (see previous "News:"). Furthermore, the currency conversion (to DM) seems to be performed at a rate that is the most favorable for the consumer --- or so travel experts advise American tourists. Note that the 3% or 5% charge that VISA might add for a $100 purchase in the USA would be small compared with the fee for a foreign check ($10 to $20). Even more important would be the convenience: credit cards would allow the consumer to avoid a trip to his bank. It also would allow purchase by E-mail or telephone (including FAX) without any further identification. To conclude, Dr. Kizilcay's hope to allow credit cards seems to be extremely attractive; and if details really can be managed, this would be yet another 'first' for ATP users.

In public E-mail of the Fargo list server dated July 6th, Dr. Kizilcay provided details for 3 possible credit cards: *"The service fees are:*
VISA   4.7% plus VAT (15%) = 5.4% of the total
American Express   4.5 % plus VAT (15 %) = 5.18%
Eurocard   3.9 % plus VAT (15 %) = 4.49%
So, I will try to get the acceptance by VISA and Am. Expr." The rate of Eurocard was attractive, but as for Master Card, one year of business history is required, Dr. Kizilcay explained. So, he hopes to begin with just two.

ATPDRAW by Hans Kristian Hoidalen (see separate story) also is available from Frankfurt. Fearing a flood (hundreds) of requests, the Can/Am user group generally has refused to distribute ATPDRAW and its WordPerfect documentation. The set requires two high-density disks and the same postage ($.75) as the 3-disk Salford EMTP. But North Americans who can not perform FTP transfers of Internet now can order from Germany! August 6th, a complimentary copy of the printed documentation was received by Air Mail in a large, padded envelope. The plastic-covered 4-ring binder nicely protects the DIN A4 pages, thereby preventing damage to the edges of the pages. Content was clearly marked by a colored, printed label that has been slipped into the clear-plastic pocket on the edge. The printing reads:

ATPDRAW
User and Reference Manual
Bonneville Power Administration

The Congress-Center in Hannover, Germany, is to be the site of the formative, first meeting of the new European EMTP user group. Originally, this had been scheduled for late September. But then it was delayed until November 7th and 8th as explained by Dr. Kizilcay

in public E-mail dated July 25th: *"The main reason for this postponement is my appointment to become a professor for electrical power systems at the Fachhochschule Osnabrueck, that was received from the Ministry of Science and Culture of Lower Saxony at the end of June. It is likely that my change from Lahmeyer to FH Osnabrueck would take place with the beginning of the new academic year at the end of September. Also, other ATP users, who want to participate in the meeting, have responded that the November date is more convenient for them."*

BPA EMTP Theory Book in WP 5.1

The 700-page EMTP Theory Book of BPA is being converted to WordPerfect 5.1 storage from the crummy, old, paper copy that was submitted by Prof. Hermann W. Dommel of the University of British Columbia (located in Vancouver, B.C., Canada) in 1987. More information should be provided in the next (October) newsletter. Work has been started by Kwang-yi Ger, Dr. Tsu-huei Liu's daughter, who recently finished her second year as a student of journalism at the University of Washington in Seattle (USA). Ms. Ger is a good writer, and she knows WordPerfect. Initially, the content of all figures will be ignored. If any reader has ideas about how best to handle graphics of BPA's Theory Book, he is encouraged to share his understanding with the Can/Am user group. Current thinking is that, initially, all figures might be scanned to produce bitmaps. To avoid making this added burden mandatory, the files should be kept external. Later, one at a time, some of these then might be replaced by vector storage.

For those readers who may have forgotten, or may never have known, Prof. Dommel signed a contract with BPA around the end of August, 1981. Among other things (cable research by Luis Marti), this contract provided payment of about $100K to Prof. Dommel for delivery of the book within 4 years. Well, the 4 years passed, but the Theory Book (named *Reference Manual* only for purposes of the contract) was not ready. This was around the end of August, 1985. So, without penalty, BPA allowed Prof. Dommel another entire year. This time, the manuscript was submitted. However, it was not yet usable because it included many pieces of intellectual property that belonged to others, and for which the professor had not obtained permission to use. This explains paragraph 3 of the official BPA form letter by Drs. Liu and Meyer dated June 10, 1987: *"Since the early fall of 1986 when BPA received the manuscript from the contractor, there has been an effort to obtain permission for BPA to publish all portions of the book that were copyrighted by others. This has been completed to the satisfaction of the BPA contracting officer, who just recently gave his approval for BPA to print this work, and to distribute copies to others."*

Back to the first paragraph. The perceptive reader might already have asked himself: convert from *paper* to WordPerfect? Did Prof. Dommel never supply BPA with a computer-stored (e.g., magnetically-stored) copy of the text? That is correct: only a paper copy was supplied by Prof. Dommel, who claimed that his disk files somehow had been lost. So, the keying by Kwang-yi Ger continues in West Linn.

ATP Rule Book using WordPerfect

Martin Jones, a doctoral student at the University of Nottingham in England, singlehandedly converted LEC's disk files of the ATP Rule Book to WordPerfect format. The present writing is a continuation of the same story in the previous issue.

Chapter XXIII, which is for CABLE CONSTANTS, was completely overhauled by BPA's Dr. Tsu-huei Liu. Availability of the reworked files was announced by Mr. Jones in public E-mail of the Fargo list server dated June 3rd. One structural change was the splitting of LEC figures that unified in a single disk file two or three 80-column card images stacked vertically. With the desire to use both metric (A4) paper and North American paper (11 inches tall), it was impossible to position the larger figures so someone would not waste substantial space at the bottom of some pages. By splitting the figures (explained in public E-mail dated May 31st), such wasted space was minimized. On the other hand, disk file size (particularly uncompressed) increased.

Chapter XXI, which is for LINE CONSTANTS, was completely overhauled by BPA's Dr. Tsu-huei Liu. But difficulty changing the graphics has delayed availability. The same is true of JMARTI SETUP.

A Reinvented BPA Will Do What ?

"BPA has been helped in the development of its competitiveness project by a pricey Salt Lake City-based marketing consultant" according to the opening paragraph of a long story on pages 13 and 14 of the May 2nd issue of *Clearing Up*. It would seem that those professional-looking *smoke and mirrors* (see column 2 on page 12 of the preceding issue) may not have been invented in Portland. The name that is repeated many times is Gardner, who *"has been awarded six contracts totaling $1.1 million to lead a seminal management retreat, evaluate the abilities and attitudes of more than three hundred members of BPA staff, and help craft both the marketing plan unveiled in February and the business plan due out in June."* While the legality of Gardner's work for BPA has not yet been challenged, there would seem to be big trouble in California: *"Some of the consultant's work for SoCal Edison -- which recommended him -- ran afoul of Edison's internal audits and is currently under investigation by the California Public Utilities Commission for billing irregularities."* As this writer has observed before, a lot of this reinvention nonsense seems to be unrelated to either engineering or financial science. Now it is learned that, for once, Washington (a major supplier) can not be blamed for much of the smoke, or even the mirrors! This is the surprising thing.

Spilling water to help salmon continues even though the practice might actually do more harm than good. This is the lead story in the May 30th issue of *Clearing Up*. It begins: *"NMFS officials apparently ordered a rollback of the controversial spill program at week's end, as suspicions mounted that the Fish Passage Center was cooking the books on gas bubble disease monitoring. FPC summaries showed zero problems, but raw data tables indicated nitrogen was found in 100 percent of some tested fish. ... NMFS also appeared ready at the urging of regional scientists to get a second opinion from a group of experts to decide whether the controversial passage program is turning into a fish kill. One source was investigating whether criminal penalties might follow from ordering spill that kills listed fish."* By way of clarification, NMFS is understood to be the National Marine Fisheries Service, and *"cooking the books"* is slang that means false accounting or bookkeeping (think of LEC as explained in the July, 1993, newsletter). So, until the law (the Endangered Species Act) is modified, the environmental wackos seem to remain in control.

"Region needs no help from policy hit men in the White House" is the title of an editorial by Cyrus Noë on page 4 of the June 6th issue of *Clearing Up*. There is mounting evidence that the politically-correct water spilling was not merely bureaucratic stupidity; instead, it seems to have been ordered by staff of President Bill Clinton himself: *"Saving us from ourselves are Will Stelle of the White House Office on Environmental Policy and David Cottingham, a former OEPer now counselor ...."* Mr. Noë concludes that regional politicians are worried about their own futures because of the debacle. Oregon Senator Mark *"Hatfield used our calculations on spill cost-benefit with a lower total cost that brings the returning fish investment down to $925,926 per fish --- this estimate in a letter to [Oregon] Gov. Barbara Roberts. The potential for another White House crisis is very high. .... Sooner or later, national media will tie the White House to $925,926 fish, and another Clinton White House scandal will be in the making."* Yes, a million dollars for each fish saved does seem a little expensive! This from the same persons who want to take over the nation's now-private (and voluntary) health care system? It's good experience is being gained by practicing on fish, first!

Retirement of your Editor from BPA was scheduled

for the last day allowed: September 2nd. However, with approval of all concerned, departure has been delayed by six months. Look for details in the next issue.

E-mail in Portland : BPA and Agora

RAINet Inc., an RGnet affiliate network, is the way the Internet access that is used by Agora describes itself in advertising that was noted on page 27 of the July issue of *Computer Bits* magazine. *"Internet TCP/IP; Join the Internet; Access the World's Information Super Highway; * 56K Frame Relay; * 56K leased lines; *14.4K dedicated lines; * SLIP/PPP dial-in; Service at Competitive Rates; Internet IP Service for Oregon and SW Washington."* The phone number is (503) 227-5665 and the E-mail address is **sales@rain.net**

BPA acquired Internet for what reason? Reports of those who attended that May 24th presentation at BPA (see the beginning of page 13 of preceding issue) are amazing. For months your Editor and other advocates had concluded that Internet might eventually be coming to BPA because our arguments in its favor had been persuasive. I.e., it had been assumed that the computer establishment at BPA finally appreciated its value. Or, if not that, at least BPA computer politicians understood the importance to those engineers who had demanded it. Apparently not. The explanation given at the May 24th meeting was that the connection to Internet had been forced on BPA by Washington! I.e., finally Internet has been mandated (government regulation) by a higher power. The winding, rutted dirt road that now connects BPA computers to the rest of the world is going to be paved to become an information superhighway in spite of the best efforts of BPA computer planners to prevent such progress. What irony! Each U.S. government agency seems to have its own problem with stupid computer bureaucracies. After hearing this story about BPA Internet, what reader can sympathize with the *Energy Star* plight of Walter Dykas at ORNL (see later mention)? That young man simply does not know how well off he really is!

News about Laurent Dubé's MODELS

The 52-page MODELS chapter of the Rule Book, revised by author Laurent Dubé, was received by BPA in both printed and WordPerfect form on August 5th. Single-sided, printed copies were made on white paper, and these should have been mailed that same day by air, from BPA's Mail Room, to its 9 primary contacts. The disk file MODELSRB.ZIP, is 171 Kbytes in size. Shortly thereafter, copies were sent by FTP to both Houghton (Prof. Bruce Mork, for placement on the plains FTP server) and Nottingham (Martin Jones).

A one-day course in MODELS was taught by author Dubé to more than 40 ATP users on April 18th. This was at the Technical University of Denmark in Lyngby outside Copenhagen, the day before the general meeting (see preceding issue). Large attendance is noteworthy because the course was voluntary, and cost extra (700 DKk, or a little more than $100). Mr. Dubé supplied the following summary: *"Topics included using MODELS to describe the operation of control and electrical components in a circuit, using the three levels of initialization supported by MODELS, using different time steps in different submodels of a data case, using self-adjusting variable time steps in a model, using a model as a multi-branch nonlinear circuit element with the new type-94 black-box nonlinear element of ATP, and using MODELS's standard data/input/output interface as a connection between ATP and user-supplied Fortran and C programs."*

The October, 1993, newsletter mentioned a subject that never was completed: *"Very sophisticated changes to TACS have been made in Japan. Prof. Ametani brought them. But they are not simple corrections. See next issue."* It is worth clarifying this now that space is more plentiful. The changes had to do with undefined inputs of a block within a feedback loop. Laurent Dubé did look at some of these TACS changes last year, and his reaction was to recommend the use of MODELS instead! Why? Because newer MODELS provides more control over how and when processing is done. There is no right answer for the cases of interest. Lack of simultaneous nonlinear solution means that approximation is needed, and this is not unique. I.e., those resourceful Japanese experimenters may have improved performance for their problem, but at the same time worsened the result for someone else. Because of the uncertainty, and Mr. Dubé's recommendation (MODELS), your Editor chose to do nothing with the changes thus far.

Mr. Dubé's work for BPA on ATP finally has come to an end. After paying the bill submitted August 5th, remaining BPA funds total $13. Mr. Dubé will still be working on MODELS at BPA expense, but Transient Stability rather than ATP will provide the framework.

Color ATP Plotting on Paper

Color printers seem to have been largely ignored since the summary of Gabor Furst's use of Pizazz+ with his H-P DeskJet 500C (see the final page of the October, 1992, newsletter). Well, the subject was raised again in "News:" of the Fargo list server dated July 7th.

Prof. Laszlo Prikler of the university in Budapest, Hungary, confirmed full-resolution color hard copy in his response. This writer had asked: *"About WordPerfect use ...., what 500C user has tried to print the colored curves*

on the screen? *WordPerfect must have drivers for HP color printers, and one would hope that screen color would become paper color. Who can shed more light on the current status of color hardcopy of ATP plots? BPA can not, since color printers are not available here."* In public E-mail dated July 8th, Prof. Prikler was able to answer the question for MS rather than WordPerfect. He wrote: *"Yes, colour hardcopy of ATP plots is possible. Redirect the HP-GL output .... and import these as a picture into Word for Windows ... Windows support lots of colour printers, so it is very easy to prepare colour ATP paper plots or colour overhead slides. It is also possible to insert .PCX files captured by Pizazz+ into Word for Windows as a picture. However the size of a colour .PCX file is very large compared with HP-GL. And one more difference: the resolution. A .PCX picture is a screen image, so the resolution is limited by the screen. An HP-GL file is vector graphic, so the only limit is the resolution of the printer."*

$339 is the *"everyday low price"* for a 500C as advertised by OfficeMax (formerly Bizmart) on page A12 of June 30th issue of *The Oregonian*. Compare with the $500 mentioned in the January, 1993, newsletter. Added specifications in the latest advertising include: *"* 300 dpi resolution in black and color; * Supports DOS and Windows software; * Prints 3 pages-per-minute."* The color and black ink cartridges are prices at $30 and $23, respectively.

Multimedia PC s and CD - ROM

Multi-media PCs are being looked at seriously as an avenue for possible ATP education. This was summarized in a paragraph of E-mail "News:" dated June 26th from which most of the remainder of this paragraph was drawn. *"The Halderman Diaries; Inside the Nixon White House"* is a new CD (compact disk) from Sony that has sparked a lot of interest among persons who are politically and/or historically inclined. Priced at $41, it is a second one of the 9 featured products of ComputAbility in the July *Computer Shopper* magazine. No, the politics are not of interest here; but the production techniques certainly are --- as a model for self-learning ("teach yourself ATP"). Quoting from page 515: *"This multi-media edition contains 700 still images, many of which come from the personal scrapbooks kept by Mrs. Halderman, as well as 45 minutes of video pulled from 30 hours of film shot by Halderman during his time at the White House."* In a long monologue about his exposure to the product, radio talk show host Rush Limbaugh said the work is well done, and very interesting. Unlike a regular book, using the computer, the reader never should be lost. According to Dr. Limbaugh, if some name might be unfamiliar, a click of the mouse on it will provide instant explanation!

"Multimedia: Books with Byte" is the headline of the dominant story on the front page of the Arts and Books section (J) of *The Sunday Oregonian* dated July 17th. The subtitle continues: *"CD-ROMs are leaping onto the information superhighway. But so far, their destination is unknown."* After some interesting but nontechnical introduction, the author, Paul Pintarich, explains that *"CD-ROM has become a full-blown adjunct to the book-publishing industry. And in the past two years, CD-ROMs on a variety of subjects have been finding their way into bookstores."* A color picture of a computer screen with windows, icons, and color illustrate the use. One small window is entitled *"Margin Note 1."* About this, the author writes: *"Interactive ability allows readers to write margin notes into the story text. Notes may be kept, removed or changed at will."* Another window that seems to be entitled *"Annotation Editor"* has a number of display areas, buttons, and a color picture of some man. About this, the author writes: *"Through the use of windows, a story can be enhanced visually by using a movie option."* So much for the illustration. How big is the market? *"Approximately 2,000 CD-ROM titles are in publication .... The Northwest's largest book wholesaler, Pacific Pipeline in Kent (near Seattle), Washington, has a current inventory of 175 CD-ROMs."* Ordinary floppy disks are being used for a less radical change to the publishing industry: *"expanded books. These are books published on floppy disks. They contain full, unaltered texts of original hardcover editions but with a versatility allowing a number of functions, including pictures, sound, author's annotations and end notes."*

To conclude, such CD-ROM products are great. But how complicated and expensive is the production (and the reproduction, to make copies for others)? Has any reader done such production himself? Can CD-ROM production reasonably be done in the home? How much more than a conventional VCR (video recorder for television), a Camcorder (the associated home movie camera), and $3K multimedia PC, would be required? Recall your Editor's observations that were initiated by an inquiry from Dr. Sayeed Ghani of the University of Northumbria in England (see the July, 1993, newsletter). The subject of ATP education has not been forgotten.

Multimedia upgrade kits for conventional PCs seem inexpensive enough. This will be illustrated by recent advertising from Computer Club, a computer store in suburban Lake Oswego. The cheapest offering is $199, which is described as follows: *"*Philips CD-ROM drive; *Sound Blaster compatible; *Sound card w/ CD-audio; *Audioware software; *Speakers; *Microphone; *Microsoft Bookshelf."* The most expensive offering has a price of $349. What more does one receive? Well, *"Double speed CD-Rom drive, ... Power amplified speakers,"* and *"5ft 10 Pack - 10 different CDs"* seem to provide added value. Who is using such equipment?

Hoidalen Completes ATPDRAW

Hans Kristian Hoidalen is the author of ATPDRAW -- a program that allows graphical assembly of ATP data. Funded by BPA, Mr. Hoidalen worked on ATPDRAW at EFI in Trondheim, Norway, between June of 1993 and May of 1994 (see story in the July, 1993, newsletter). Mr. Hoidalen visited BPA the week before the IEEE PES Summer Power Meeting, and gave a 2-day presentation to interested employees July 19th and 20th. This was followed by Mr. Hoidalen's larger but shorter (2-hour) presentation in San Francisco (see separate story about Prof. Ned Mohan's course).

User documentation became available from the plains FTP server as announced by Prof. Bruce Mork in public E-mail of the Fargo list server dated May 18th. In compressed form (as .ZIP files), these WordPerfect manuals are not difficult to store or transmit. There are 3 files, with two --- the Reference Manual and the User Manual --- being of general interest to users:

```
REF_MAN  ZIP  462984  05-19-94  10:00a
USER_MAN ZIP  225484  05-19-94  10:05a
```

Usage requires decompression, however, and readers are warned that this operation is hazardous to free space on the disk. Unheard of compression ratios of around 20 to 1 are involved. This comes from the graphics, of course.

Bitmapped PostScript is the cause of the enormous file size. This first was predicted by Stephen Boroczky of Pacific Power in Sydney, Australia, in public E-mail of the Fargo list server dated May 1st. It then was confirmed at BPA by Dr. Tsu-huei Liu who managed to make one of the figures visible by extracting it from the WP file. As illustrated in list server mail dated June 2nd, anyone then can see the bit-mapped nature. Within the User Manual file USER_MAN.WP, Dr. Liu chose Fig Box:4 with name menu23s.eps as an example. Consider the left edge of a dozen contiguous lines --- each about 240 characters wide:

```
8866611ffffffffffffffffffffff0000000000000000000ff0000000
8866611fff000000fffffffffffff00ffffff000fffff00ff0000000
8866611fffff00fffffffffffffff00ff000f00ff00fff0ff0000000
8866611fffff00ffffffffffffff00ff000000ff0ffff0ff0000000
8866611fffff00ffffffffffffff00ff000000ff0ffff0ff0000000
8866611fffff00fff000000ffffff00ffffff00f0f0ff0ff0000000
8866611fffff00fff000000ffffff000000ff00ff00ff0ff0000000
8866611fffff00fff000000ffffff0000000ff0ffff0ff0ff0000000
8866611fffff00fffffffffffffff00f000ff00fff00ff0ff0000000
8866611fffff00ffffffffffffff00ff00ff000ff00ff0ff0000000
8866611fff000000fffffffffffff000ffff0000fffff00ff0000000
8866611fffffffffffffffffffffff000000000000000000ff0000000
```

Yes, this says I= 50. Most of this is either black ("0") or white ("f") when printed on white paper. The intermediate values of 8 and 6 on the left edge would seem to be gray shading of the left edge of the menu. This is near the top of a small menu that has the title "Nonlinear Resistor" imbedded in the heading border. Yes, that, too, could be read --- more easily if file contents were put in motion by scrolling sideways within MS-DOS EDIT! Author Hoidalen then confirmed that such bitmapped Post-Script comes from the built-in hard copy capability of GIGS. So, we are stuck with the waste (low accuracy and large storage) for a while. Except for gray shading, use is essentially monochrome for which only a single bit of each byte is used. This is 75% waste, and explains most of the extra factor of 4 or 5 in the compression ratio. I.e., an ordinary, unformatted monochrome bitmap would be much less wasteful.

Bit-mapped graphics (the preceding paragraph) can not be avoided, it would seem. Author Hoidalen confirmed at the short course in San Francisco that he knows of no alternative today. Although GIGS offers alternatives to PostScript, all are believed to be bit-mapped (e.g., .PCX files). A consequence of the .EPS use is that the average popular publishing software will not display the figures on computer screens. There are alternatives, however, and two of these should be discussed in the next issue where there should be more room.

OS/2 Version 2.1 seems to be a superior platform for running ATPDRAW. This information came from Glenn Wrate, a graduate student of Prof. Bruce Mork at Michigan Tech in Houghton, Michigan. In E-mail dated July 22nd, he wrote: *"I was having trouble getting ATPDRAW to run on a machine with CD-ROM, sound card, and virus scan TSRs. The most free lower memory I could get was 530kB. That's just not enough for ATPDRAW. Rather than altering the configuration files, I rebooted and started up OS/2. With the same devices available, that is, the sound card and CD-ROM, I had 611kB free (more could be available -- I just used the default configuration). ATPDRAW ran just fine! One caveat, ATPDRAW only works in full screen mode. If you try ATPDRAW in a window, OS/2 suspends it until you switch back to full screen mode."*

Mohan Course: San Francisco, July 23-24

Prof. Ned Mohan of the University of Minnesota gave his portable EMTP short course immediately prior to the 1994 IEEE PES Summer Meeting in San Francisco. The attendance list that accompanied the class notebook contained 48 names and addresses, making this the biggest single EMTP short course ever. Beyond the obvious quality, popular content, and popularity of San Francisco, to what does Prof. Mohan credit his success? Hard work! In the preceding issue, it was stated that *"Prof. Mohan began early, and advertised hard!"* But your Editor did not understand how hard (at the course, Prof. Mohan indicated mailing to some 15K addresses).

Foreign registration, too, would seem to have reached record highs --- even on a percentage basis. Of 21 total, only 4 came from Canada (a popular source in years past). Totals for other countries follow: 4 from Japan, 3 from England, 2 each from Mexico and Spain, and finally, 1 each from Australia, France, Korea, South Africa, Sweden, and Taiwan.

MODELS author Laurent Dubé was added to faculty at the last minute. This represented an unadvertised fringe benefit: a 2-hour lecture Sunday morning by someone who had all the answers to any questions about the newer control system modeling of ATP. This was a big change. Two years ago (Seattle), MODELS was just mentioned in passing. One year ago (Vancouver), MODELS was allowed about 15 minutes (Dr. Kurt Fehrle). This year, the newer and more powerful MODELS received more time and attention than the older TACS. Since power electronics sometimes involves complicated controls, the emphasis probably makes more sense for this course than for the general power systems course in Florida.

Disk copying was done for only 16 persons, according to Dr. Liu's records: 6 who received only ATPDRAW (2 disks) and 10 more who also received Salford EMTP (3 disks). For those having a sixth disk, the 1012-Kbyte archive ALLWP5.ZIP of newsletters between September of 1988 and April of 1994 (except July, 1989, which was missing) were copied. BPA's Austin notebook computer (see preceding issue) was used for all of this. Battery discharge while using an external power connection was not a problem as it had been in Seattle two years earlier. In fact, not much charging was noted. No longer would power supplies seem to be underpowered. Another trick would seem to be stopping the disk when not in use. At times during a TPPLOT demonstration, an unexpected pause of 2 or 3 seconds was experienced --- presumably as the disk restarted. With a lot of RAM, and disk caching, the disk is not needed much of the time!

Can/Am floppy disks were provided for just one person this year: Prof. Yim Wha Yeong of Kwangwoon University in Seoul. He agreed to pass the set of five 3.5-inch disks, after using them himself, to Tae Won Kwon of KEPCO for distribution to other Koreans. The 16 copies of the preceding paragraph were the property of the recipients. This is another sign of the changing times: students are expected to bring their own disks if they want the latest copies of ATP materials.

Mexico was the destination of the one printed Rule Book that was carried to the course. This was the country most in need, it was reasoned. So, M. C. Ramon I. Vila Vivaldo of Instituto de Investigaciones Electricas was given the copy, for which he promised to send a check for $25 later (not yet received as of August 29th).

Dr. Tsu-huei Liu and your Editor ended the regularly-scheduled presentation with an hour of overview based on transparencies as in preceding years. Unlike preceding years, installation of Salford EMTP disks was not illustrated. Then, following an intermission of some 15 minutes, a demonstration of TPPLOT and any other subjects of interest began. This ran until about 20:30, for the half dozen or so diehards who lasted to the end.

Vancouver, British Columbia, Canada, was the site of the 1993 IEEE PES summer meeting. Unfortunately, this was a year early. That beautiful Delta Pacific Resort and Conference Center just mailed advertising about recent improvements. In a June 17th letter to recent guests, management explains about its *"newly refurbished 460 room hotel, and the addition of our fabulous 225' indoor waterslide."* It **was** a nice place. Too bad neither your Editor nor Dr. Tsu-huei Liu ever found the time to use any of the special facilities! In retrospect, Prof. Mohan's choices of the cheaper Radisson hotels in Seattle (1992) and San Francisco (1994) were more practical.

Gayle Collins of the University of York in England would seem to have asked the most interesting question at the short course. A MATLAB user, she is happy to be able to postprocess .PL4 files using PL42MAT by Raffaele Salutari of 3E Ingegneria srl in Pisa, Italy (see story on page 8 of preceding issue). However, she wants more. She wants to incorporate MATLAB into ATP simulation the same way TACS or MODELS presently is. It was Laurent Dubé who first believed that this might be possible. He showed that MATLAB does allow connection to external programs --- at least for some multitasking operating systems (e.g., for the Apple Macintosh of Carson Taylor at BPA). So what about MS Windows? Can the Salford FTN77/x86 compiler be used, possibly with ClearWin? When Ms. Collins returns to York, she will attempt to answer these questions by a personal visit to Salford Software at the university.

Your Editor recalls two rounds of sustained applause for Hoidalen's masterful demonstration of ATPDRAW during two hours early Saturday evening. For someone who really knows what he is doing, and is quick with the keyboard and the mouse, ATPDRAW can be made to do **very** impressive things. Included were automatic coupling to Salford EMTP and TPPLOT. But how much of the success of this great demonstration came from Hoidalen as opposed to ATPDRAW itself? At the end of the show, Prof. Riaz asked this difficult question privately. The question is appropriate, and the answer is not obvious.

New Ametani CABLE PARAMETERS

Prof. Akihiro Ametani of Doshisha University in Kyoto, Japan, spent all but 3 days of the period July 25th through August 13th in Portland working on cable-related problems at BPA. This was announced as follows on July 3rd in "News:" of the Fargo list server as follows (remainder of this paragraph): Details are interesting in that they differ from any previous visit. During the earlier years (1976, 1977, etc.), Prof. Ametani was paid by BPA for his work (really, time spent) on EMTP, and this included travel to Portland. In later years (e.g., 1993), Prof. Ametani visited as any tourist would --- completely at his own expense. This year, BPA's James Hall, the

man who arranged BPA funding for ATPDRAW, has broken new EMTP ground once again by arranging a novel mixture that allows both BPA and Prof. Ametani to make contributions to ATP. Just as Hans Kristian Hoidalen worked for BPA via an intermediary (Pacific Engineering, PE), so Prof. Ametani, too, will be reimbursed by PE. But there is an enormous difference: Mr. Hoidalen was paid for his time (the dominant cost) whereas Prof. Ametani will not be so paid. BPA is reimbursing only Prof. Ametani's expenses for the trip to Portland (airplane ticket, hotel, and meals). As a result, Prof. Ametani's new computer code (more about this later) remains his own property. However, it will be available to anyone (including BPA) via ATP. The contribution from Prof. Ametani to ATP is being handled the same way the contribution of program EIGEN by CESI and ENEL was handled (see the April, 1994, newsletter). .... To conclude, the arrangement with Prof. Ametani is a bargain for BPA --- a unique opportunity to simplify what otherwise might be a suicide mission for BPA's Dr. Tsu-huei Liu and this writer. Thanks to Jim Hall, a new sort of ATP cooperation with BPA has been made possible. For a mere $5K in estimated expenses, plus PE overhead, BPA is able to take advantage of Prof. Ametani's free advice during three weeks, and perhaps also participate in a modification of the way the industry handles cables and their frequency-dependence. The first radical change in a decade now is being considered. For BPA, the leverage is great: the cost is small whereas the potential EMTP payoff is enormous.

CABLE PARAMETERS is the new request word that is used to transfer to the all-new cable constants program from Prof. Ametani. The request is made at the top of CABLE CONSTANTS as the following illustrates:

```
      BEGIN NEW DATA CASE
      CABLE CONSTANTS
      CABLE PARAMETERS
        < <   Etc. (geometry, ... > >
      BLANK card ending frequency cards
      BLANK card ends cable constants
      BEGIN NEW DATA CASE
      BLANK
```

Much of the data of CABLE PARAMETERS is the same as the data of CABLE CONSTANTS, but there are important differences. So, there are separate user instructions (pages for the ATP Rule Book).

Arbitrary (i.e., non-circular) cross-sectional shape of a conductor is one important extension that is available in Prof. Ametani's new CABLE PARAMETERS code. Theory for this can be found in Electrical Engineering in Japan, Vol. 111, No. 2, 1992 (Ametani and Fuse are authors of "Approximate method for calculating the impedance of multiconductors with cross sections of arbitrary shapes"). A second extension is continuous transposition, which has been called *snaking*. Finally, there is user-supplied shunt conductance. A practical illustration that demands this third and final new feature

is the railroad signaling of Stuart M[c]Kay (see the April, 1993, issue). Data applicable to the London Underground was supplied by Mr. M[c]Kay, and was worked with by Prof. Ametani during his stay in Portland.

Standard test cases CASE*.DAT of the new code have been appended to DC-27 and DC-28 (the existing CABLE CONSTANTS test cases). There are 3 classes. The first six of ten additions to DC-27 were CASE1*, which are for overhead lines (rather than cables). The remaining 4 are CASE3*, which involve cables in a pipe. Finally, the 8 cases of cables without a pipe are CASE2*, and all of these were appended to DC-28. Use of the new code with JMARTI SETUP can be found as a new third subcase of DCN-6. It is the 2-phase, 600-meter configuration of CESI's Dr. Ivano Bonfanti (see separate story) that is illustrated. For this case of instability, there seemed to be no difference between old and new code. I.e., both were unstable. As for SEMLYEN SETUP, no connection has been established thus far (mid-August). Is there a need?

The fixed dimensions of Prof. Ametani's code have not yet been eliminated in favor of variable dimensioning. The change would be mechanical, but is involved, so has not yet been undertaken. For the record, many arrays are dimensioned (12,12), so this seems to be the limit: 12 conductors. For nearly all practical, initial testing, this should be adequate, it is reasoned.

All library functions associated with complex variables have been placed in-line for the new code. It is important to state for the record that this was never done for the old CABLE CONSTANTS code. The use of INTRINSIC (to declare functions) was only for real variables and functions, previously. So, if fast computers were unusually slow for CABLE CONSTANTS, this provides a new explanation that had been forgotten in recent years.

Arithmetic has been converted from the original 32-bit COMPLEX to 64-bit COMPLEX*16. This was done at the end of the first week, and it did change some of the answers significantly. Fortunately, Prof. Ametani was here to approve of the new results.

G-field numbers (e.g., 10G12.4 for output) were used in places by Prof. Ametani's code. For reasons of uniformity only, these have been replaced by E-field equivalents (e.g., 10E12.4) that are standard elsewhere in ATP. For those unfamiliar with the difference, E-field will always use an exponent whereas G-field may or may not depending on the size of the number. Unfortunately, there is no gain of precision when the exponent is not needed. I.e., G-field numbers do not provide a system-level alternative to optimal encoding of ATP (e.g., for time-step loop output). In fact, precision seems to be lost when an exponent is not used. For example, one column of the modal table was observed to contain the numbers

0.36840 and 1.29042E-02 --- both left adjusted! So, G-field usage has been removed.

LU6VRT of STARTUP may be decreased by the new CABLE PARAMETERS code, users should be warned. The user may start with a larger value (e.g., the 32768 as distributed by the user group), but any such positive value will be reduced to zero as the new code begins. This is a temporary need because the new code uses WRITEs directly to LUNIT6. Slowly, such direct output is being replaced by indirect output of either TFLUSH or OUTSIX. The latter is temporary only, until all text is moved to KILLCODE.MUP outside the UTPF (remember multilinguality).

Kwang-yi Ger, Dr. Tsu-huei Liu's daughter, is the person who rapidly and competently transferred the text (including all equations and Greek letters) of Prof. Ametani's hand-written user manual to WordPerfect 5.1 storage. This was done during the first two weeks of Prof. Ametani's stay in Portland. The figures remain to be computerized, however. Current thinking is that Prof. Ametani's printed figures could be scanned, and the resulting bitmapped files could be connected to the WP5.1 document, at least initially.

JMARTI Instability with Cables

CABLE CONSTANTS use within JMARTI SETUP has been evaluated by Ivano Bonfanti of CESI in Milano, Italy. Quoting from private E-mail dated May 25th, he reported about operation on other pieces of that GIS (Gas Insulated Substation): *"After installation, I immediately tried a new case ... applied to another of the many cable pieces I have to model, this time a 290 m -bimodal cable. Step responses and power frequency behavior are excellent ! .... Also, I disseminated the new feature in CESI to the interested people (there was a lot of excitement on the subject)."*

Trouble with stability soon was reported, however. Pasting from the public report in E-mail "News:" dated June 22nd : Dr. Ivano Bonfanti .... is having trouble using certain JMARTI SETUP branch cards that he derives for the different sections of cable that make up the GIS (Gas Insulated Substation) he is studying. The first indication of trouble came in private E-mail dated June 9, which reported: *"Among the many models I had to do, there was a long cable, about 600 m long, split in 2 equal pieces with sheaths grounded at the extremes and open in the middle, i.e. grounded-open open-grounded. To model the cable, I then used the JMARTI SETUP + CABLE CONSTANTS option, and connected the 2 pieces in series, and connected the sheaths as desired. On the obtained JMARTI models, I made step responses, extended to 8-10 travel times, and steady state. Both looked fine in the sense that the steady state current was*

right, and the travelling waves were damped. Happy with this, I inserted the cables in the system and ran the simulations. To my surprise, the voltage transients appearing from the results were negatively damped in the sense that the oscillations, instead of decreasing in amplitude with time, were increasing."

The best frequency-dependence experts in the world have been thinking about the problem, and contemplating alternatives. Those who subscribe to the Fargo list server first received information on the subject from Dr. Mustafa Kizilcay of Lahmeyer International in Germany. Dated July 20th, this 12-Kbyte analysis clearly demonstrates variability of the diagonalizing transformation matrix [T] as a function of frequency, and the fact that the representation is wrong near zero frequency (required for stability, it would seem). Then on July 22nd came the unexpected and radically-different 7 Kbytes from Robert Meredith of NYPA in White Plains. This begins with the following paragraph: *"At the New York Power Authority I have been able to build EMTP models of cable systems which inherently model wave propagation in the conductive and/or magnetic materials of the cable and earth. The methods are akin to finite elements techniques and may be used efficiently when there is sufficient symmetry. While I am not prepared to discuss these methods by E-mail at this time, I can discuss the physical processes which need to be modeled and the errors of the Marti approach. My expertise is not in the mathematics, but in comprehension of the physical effects."* Finally, there is Prof. Akihiro Ametani of Doshisha University in Kyoto, Japan, who is visiting Laurent Dubé and Taku Noda (the latter his former student) on the Oregon Coast as this paragraph is being keyed on August 8th. All three have ideas, although they have not yet been shared with the Fargo list server (public E-mail). So, this paragraph ends as it began: The CESI problem of instability is in good hands! More information should be available soon.

Miscellaneous Intel PC Information

Chicago is the code name of the next major release of MS Windows, which eventually should be called simply Version 4.0. Page B20 of *The Oregonian* dated May 24th contains a story about its release, which was announced by Bill Gates himself at the spring Comdex-Windows World trade show in Atlanta, Georgia. It *"will be out late this year, chairman Bill Gates said Monday."* So says Associated Press author Marc Rice. As for size of the MS Windows world, Mr. Rice writes: *"Now in its third generation, sales estimates range from 30 million to 50 million units."* Your Editor can readily understand not knowing how many copies have been **stolen**. But how is it possible for there to be such ambiguity about sales? Maybe Microsoft has kept its sales figures secret? Yet another indication of the dominance of MS Windows was noted on page 8 of the August issue of *Computer Bits* magazine: *"at last count, there were almost 300*

accelerator board manufacturers. .... But, almost all of them rely upon less than a dozen chip sets produced by only 7 chip set manufacturers."

Hard disk prices continue to drop. Supercom is the name of a computer store in a suburb of Portland. At least once a week, a sheet of advertising from this store is received by BPA's fourth-floor FAX machine in the middle of the night. The following prices for new drives are seen on FAX dated June 18th: $179 for 256 Mbytes, $185 for 261 Mbytes, and $199 for 344 Mbytes. For national mail order, consider Direct Connections, which uses toll-free order number (800) 572-4305. A recent sheet of advertising from these people shows a 12-msec Conner drive: 545 Mbytes for $460. If this is not big enough, try the 9-msec, 1-Gbyte behemoth for $815!

"Intel may reduce Pentium chip price" is the headline of a Bloomberg Business News story on page D12 of *The Oregonian* dated 18th. The story begins: *"Intel Corp., seeking to keep rivals at bay, is expected to cut prices of its top-of-the-line Pentium chips as much as 25 percent for the second half. .... Some analysts said the cuts could be even deeper --- as much as 45 percent. .... Intel, on average, shaves 5 percent off old products' prices and 8 percent to 9 percent off newer ones each quarter. Pentium price cuts have been bigger as competition has heated up. .... The PowerPC partners also have the financial muscle to go against Pentium, and the PowerPC sells for about a third the price of Pentium."*

"On-chip emulation in RISC processors presents clear X86 alternative" is the title of a summary that spans the bottom of pages 22 and 23 of the June 20th issue of *PC Week* magazine. This is associated with the larger story about PowerPC: *"The Tower of Power PC; Untapped potential in search of a killer application."* Well, if software emulation of Intel has not been an effective weapon in the struggle of RISC makers, why not switch from software to hardware? *"On-chip emulation is much faster than software-based methods because the logic for translating X86 instructions is etched into the CPU itself. Software emulation also requires more frequent access to memory, which bogs down processing."*

Intel itself seems interested in such technology! A short news story on page 10 of the same June 20th issue of *PC Week* magazine begins: *"Intel Corp. and Hewlett-Packard Co. have united to develop the next generation of microprocessor technology .... Intel and HP joined forces to develop compilers and processors that are up to 10 times faster than today's fastest Pentium chips. Expected in 1997 or 1998, these CPUs will be binary-compatible with Intel's X86 architecture ...."*

Integrated audio is the latest extension of computers to catch your Editor's eye. This term can be found in advertising for Ambra notebook computers on pages 78

and 79 of the May 23rd issue of *PC Week* magazine. *"Integrated audio lets you record, play back and edit anything from comments to conferences. No need to carry a separate tape recorder!"* This particular book-size product was not short of hard disk space (450 Mbytes), so presumably this is where the editable sound would be stored. As with the addition of FAX capability to modems, the addition of audio recording to a portable computer appears to be a sure winner. But how would the editing work? Could one tamper with syllables, and perhaps splice in synthesized speech? The next step then would seem to be the use of such speech with ATP and TPPLOT error messages!

But who is Ambra? *"IBM will close Ambra Computer Corp., a year-old subsidiary formed to make inexpensive personal computers to be sold directly to customers."* This is the first of 4 short paragraphs in a short story entitled *"IBM shuts down subsidiary created for direct marking,"* which appeared on page D1 of the July 29th issue of *The Oregonian*. So, what was IBM's problem? The third paragraph states: *"The unit was conceived as IBM's answer to low-priced competitors. But it started up after brand name PC makers in 1992 began accepting lower profit margins, a change that resulted in pricing that matched the off-brand rivals."*

Apple Computer continues to lose PC market share in the USA. According to a report on page 24 of the May 30th issue of *PC Week* magazine, first quarter shipments by Apple were only 10.4% of the total --- behind leading Compaq Computer at 12.4%. IBM was third with 10.1%. Remember when Big Blue **owned** this market?

100-MHz 486s already are available from numerous vendors in the form of PCs based on Intel's new DX4 processor. Some analysts believe these latest offerings provide meaningful competition for Pentium. In a detailed evaluation on page 117 of its May 23rd issue, *PC Week* magazine wrote the following: *"if well-designed and aggressively priced, (they) could spell trouble for 60 MHz and 66 MHz Pentium machines."* That is, the top of the 486 line overlaps the bottom of the Pentium line. A detailed review can be found in the cover story of the July issue of *Computer Shopper*, which is entitled *"100 MHz: Should you buy a DX4?"* What does the name mean? Not what one might think! Author Bruce Brown explains: *"while the DX4 name implies speed quadrupling, the Intel DX4 actually multiplies the speed of internal CPU processes 2, 2.5, or 3 times, depending on the specific model. Two versions of the CPU were available at introduction: a 75MHz version that communicates externally at 25 MHz, and a 100 MHz chip that can work with either a 50 MHz or 33 MHz system bus."*

Meanwhile, DEC continues to bleed. This is a continuation of the paragraph with the same opening sentence in the preceding issue. *"Digital Equipment*

planning more layoffs" is the headline of a story on page B1 of the May 7th issue of *The Oregonian*. What is the latest excuse? Readers can be sure that the situation is **really** serious when neither the economy nor particular events (e.g., restructuring costs) are being blamed. This time, survival of the company provides the justification! President and CEO Robert Palmer told employees that *"failure to act promptly will result in greater loss of employment. In fact, the entire enterprise could be at risk."* According to the New York Times News Service story by Glenn Rifkin, DEC now has 92K full- and part-time employees, and has just announced *"plans to cut at least 20,000 more employees in an effort to reduce costs and return to profitability."* On the cover of the July 4th issue of Information Week magazine will be seen the grim face of DEC CEO Palmer. The accompanying text reads: *"Digital's Last Chance; Facing another huge loss, the firm readies a turnaround plan. Will it be radical enough?"* Inside can be found the summary conclusion: *"There's a consensus that Digital has sunk as low as it can go, that it must show upward momentum very soon. Otherwise, the company 'risks becoming another Data General, or worse, another Prime or Wang,' says Terry Shannon, an analyst at Illuminata."*

Yes, as this writer has been saying for years, the money of time-shared computers just does not exist any longer. That is the good news (for consumers, if not time-shared computer manufacturers).

PERUSE is the name of shareware by *PC Magazine* that was obtained from Robert A. Schultz of New York Power Authority (NYPA) in White Plains. In E-mail dated April 15th, he wrote: *"I am attaching a HOT screen scroll utility I downloaded today from PC magazine BBS. At last, pseudo-Apollo text scrolling for the masses! This program was described in Meredith's April 12 PC Magazine issue. I think you'll really like it."* Yes, developers in Portland did like it --- particularly because the price (zero) and size (small) were right. A third reason to prefer PERUSE to the $17 SCROLLIT by Bromfield Software (see the January, 1993, newsletter) is that PERUSE never seems to be confused by Salford EMTP output as SCROLLIT sometimes was. So, the latest NYPA discovery was added to the GIVE2 disk of Salford EMTP distribution as shown by DOS DIR :
      PERUSE ZIP   33792 04-15-94 3:17a
Yet, as explained in public E-mail of the Fargo list server dated April 19th, PERUSE is not perfect for use by your Editor. For one thing, there seems to be a conflict with the **Ctrl-F3** function of shareware PCWrite (for file inclusion): this inadvertently triggers PERUSE as if the **Scroll** key had been pressed, thereby necessitating an extraneous, extra **Esc** before the PCWrite prompt for a file name is seen. A second problem would seem to be lack of a way to write from the PERUSE memory to a disk file. This was mentioned in public E-mail dated April 17th, to which no one responded with a solution. To

conclude, PERUSE allows the user to look at screen history, but it does not yet offer a way to copy a chunk of it to disk for other uses. This is an important and useful function of Vernon Buerg's shareware LIST (the **Alt-M**, **Alt-B**, and **Alt-D** sequence). In any case, PERUSE works very well. Details are provided in the accompanying .DOC file. To initiate it using 1 Mbyte of extended memory, simply send **PERUSE /X1024**

"Novell will acquire Wordperfect Corporation, as well as Borland International Inc.'s Quatro Pro spreadsheet." This surprising news was read on page 13 of the May issue of *Computer Bits* magazine, which described the development as possibly *"the computer industry deal of the decade. ... The duo vows to create a new class of software applications for a time 'when all applications will be network applications.'"* Well, maybe.

Energy Star is the name for *green PCs* (see the July, 1993, newsletter) at Oak Ridge National Laboratory (ORNL) in Tennessee, USA. This was explained by Walter Dykas in public E-mail of the Fargo list server dated May 27th: *"I mentioned 'Energy Star' a while back. This is a U.S. government / DOE [Department of Energy] initiative that essentially puts power management functions into desktop computers. Besides lower power consumption for chips, some Energy Star implementations after a time delay, shut down peripherals. Energy Star is done in various ways that are still evolving. One method uses a power-management board and a device driver (in the config.sys). Currently, there are ways to disable this, but... things will **only** get more complicated for the personal computer user (and system manager). One of my fears is: starting a simulation to run over a weekend, coming back Monday and finding out the PC went to sleep an hour after I left!!"* As your Editor observed in response, it is entirely possible for Monte Carlo (STATISTICS) simulations to run minutes or even hours without accessing the disk. This is because there normally is no .PL4 file, and the .LIS file might not be updated for several energizations because of buffering of variable LU6VRT (in the STARTUP file). Energy Star is not voluntary, needless to say. Mr. Dykas wrote about procurement complications, too: *"At ORNL, we can purchase **only** Energy Star computers, unless a special exemption is received. Until recently there were no Energy Star Pentiums, so people were either buying Energy Star '486 (not good) or not buying (not good either)."* Oh, the suffering that goes on at ORNL (it is hard for your Editor, who has never even seen a Pentium, to show much sympathy)!

The 486 microprocessor itself: just how cheap is it these days? FAX advertising from Supercom, a Portland area computer store, was received at BPA on July 7th, and this shows Cyrix 80486DX33, DX40, and DX2/50 chips priced at $140, $162, and $179, respectively. So, the answer is *plenty cheap*! Today, it would be

industrial-strength stupid (Bruce Williams-speak) to buy a crippled SX, in light of these DX prices. As for 386s, they seem to have gone the way of the dinosaur.

Miscellaneous Small Items

Job descriptions that mention EMTP no longer are uncommon. One can be found on page 65 of the May issue of *IEEE Spectrum*. This begins: *"Grad Student Ph.D. Assistantships and possible assistant engineer or postdoctoral positions open for only highly experienced engineers in power quality, expert systems, and EMTP."* This was submitted by Prof. Alex Domijan, a colleague of Prof. Dennis Carroll at the University of Florida in Gainesville (USA) .

STATISTICS simulations involving TACS or MODELS generally were in error prior to May 21st if the base case simulation was not omitted using the request OMIT BASE CASE. Yet, versions older than August of 1993, were not affected by the error, which accompanied the delay of TACS and MODELS initialization until after manually-specified initial conditions had been read (see mention in the October, 1993, newsletter).

STATISTICS simulations involving nonlinear elements in 2 or more subnetworks would die prior to June 9th if other than the final subnetwork had the most nonlinear elements. Buddy Crill of Power Engineers in Hailey, Idaho, USA, sent this writer a Monte Carlo data case that failed in table dumping. New trouble from an old bug was found to be responsible. In the January newsletter can be found the sentence: *"The second subcase of DC-7 pointed to the need for a second correction in SOLVLN (use of REAL*8 CCHAR for INTEGER*4 KSING)."* Well, the name is SOLVNL, and DC-7 was not very demanding since it did not have 2 or more subnetworks with nonlinearities. As explained in "News:" of the Fargo list server on June 14th, Mr. Crill received quick attention because he was able to send his data to Portland by E-mail: he found a colleague who used CompuServe.

Missing LISTSIZE.DAT no longer will result in an error termination at the start of execution. The idea for better treatment came from Randy Suhrbier, who supports different DEC VMS versions in different places. For him, extra file LISTSIZE.DAT was a nuisance since he typically would use the limiting .BPA dimensions, anyway (no shortage of RAM or disk with his computers, obviously!). Yes, the program knows its limiting dimensions so these can be used if no LISTSIZE.DAT can be found. This change entered the UTPF July 1st. Included is a new, one-line warning message that might be written to LUNIT6 at the start of execution: "Note: Vardim input LISTSIZE.DAT could not be connected. Use maximum sizes."

"C End of $INCLUDE ...." is the beginning of the ATP-created comment card that marks of end of data that accompanies any particular $INCLUDE usage. Prior to correction on June 24th, the following file name (which identified the disk file) was garbage (typically a number such as 30). The error first was called to your Editor's attention by BPA's Robert Hasibar. Following correction, the two card images immediately preceding the blank card ending source cards of DC-58 correctly appear as:

```
C End of $INCLUDE.  File name = DC58INC3.DAT
C End of $INCLUDE.  File name = dc58inc2.dat
BLANK card ending source cards
```

Power and energy signals of the output vector were identified for plotting purposes over the 4th of July weekend. This was in response to a request from BPA's Randy Suhrbier, who correctly observed that, without such a change, a plotting program such as his (for DEC VMS computers) has no way of informing the user which variables are not what they seem to be (voltages and currents). He is right, of course. Power and energy are fundamentally different from variables of control systems (TACS or MODELS) or rotating machinery (Type-59 S.M. or U.M.) in that the first name of the naming pair has no special significance. So, any plotting program needs more help, and this now follows possible comments of the .PL4 file (see $BEGIN PL4 COMMENTS in the July, 1993, issue). For all 3 basic .PL4 file types, the beginning is marked by a character string that begins "013NPOWER =". It should come as no surprise that the random-access C-like files again demonstrate their superiority over the other two (sequential) alternatives in that a plotting program can access the new information directly. For C-like files, experimentally reading through the signals to find the end is not required. To learn what has been done for Salford TPPLOT, see the second story of this issue. A second thought is about the value of special plotting programs such as Salford TPPLOT. Yes, separate, general, commercial alternatives such as MATLAB can be used. But the distinction between time and frequency, or the identification of power and energy, is not obvious for these non-ATP programs. To conclude, the plotting might be better in some ways, but the convenience of EMTP-related intelligence is nonexistent in general commercial products.

Raffaele Salutari of 3E Ingegneria srl in Pisa, Italy, is the person who created PL42MAT as explained in a story of the preceding issue. About the conversion of large files (400 Kbytes), no one has reported any trouble. Public E-mail of the Fargo list server requested the following on May 20th: *"Has any PL4TOMAT user been slowed by the conversion of larger .PL4 files? If so, now would be the time to speak up."* Thus far, there has been no response, however, so the Salford C compiler has not yet been applied to Mr. Salutari's program. But this still could be done (are any newsletter readers concerned)? Final thought: is PL4TOMAT available on the plains FTP server? If not, it should be (send to Prof. Mork).